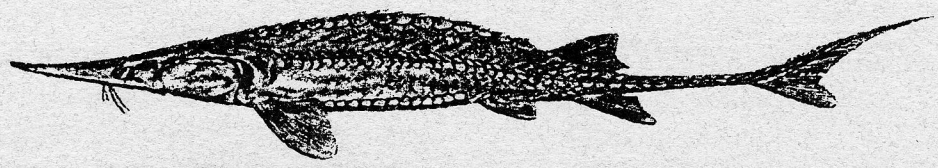


PALLID STURGEON RECOVERY UPDATE

- the latest research and recovery actions -

August, 1992 **Editor: S.Werdon**

Recovery Activities Underway

Following is a brief summary of current recovery activities. Additional information can be obtained from the contact individual(s).

Rangewide - The **U.S. Army Corps of Engineer** (Corps) and **U.S. Fish and Wildlife Service** (Service) pallid and shovelnose sturgeon genetics study is underway. Samples of muscle tissue have been obtained from pallid sturgeon in the Missouri River above Fort Peck Reservoir and from frozen North Dakota and Montana specimens collected in past years. Pallid sturgeon fingerlings raised at Blind Pony State Hatchery in Missouri are undergoing preliminary genetic analysis using allozyme protein electrophoresis. All specimens will eventually undergo DNA analysis. Shovelnose sturgeon samples have been obtained from the Missouri River below Fort Peck, the Yellowstone River in Montana, and the Mississippi River in Louisiana. Genetic Analyses, Inc. of Smithville, Texas is conducting the genetic evaluations. Contact: Mark Harberg (402-221-7270), Corps of Engineers, Omaha, NE.

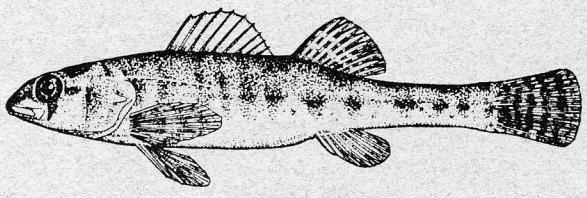
Activities in Montana - The **Montana Department of Fish, Wildlife and Parks** (MTDFWP), through contract with the **Corps**, continues to track radio/sonic tagged pallid and shovelnose sturgeon in the Yellowstone River and in the Missouri River from Fort Peck downstream to the Yellowstone-Missouri confluence. The **Cooperative Fishery Research Unit** at Montana State University is assisting with tracking. Habitat selection data are being collected at fish relocation sites. One tagged pallid sturgeon has ranged as far as 15 river miles and has moved freely between the two rivers. The MTDFWP is also performing larval fish surveys. Larval sturgeon have been collected previously during mid-July from the upper Missouri River. Contact: Pat Clancey (406-682-7807), Montana Department of Fish, Wildlife and Parks, Ennis, MT or Bob Bramblett (406-994-3698), Montana Cooperative Fishery Research Unit, Bozeman, MT.

MTDFWP personnel are also radio/sonic tagging pallid sturgeon captured on the Wild and Scenic Missouri River above Fort Peck Reservoir. Nine pallids have been captured this summer using long lines and trammel nets. Four tagged pallids were monitored from May through July and exhibited frequent movements. One pallid was tracked over an area of approximately 65 river miles. Fish have traveled upstream as far as the mouth of the Morais River. Contact: Bill Gardner (406-622-5108), Montana Department of Fish, Wildlife and Parks, Fort Benton, MT.

INSIDE:

The **U.S. Bureau of Reclamation** (Reclamation) contracted the **MTDFWP** to survey pallid sturgeon near two Reclamation projects in Montana. Field work by the MTDFWP was completed in mid-August. Over 1,100 shovelnose sturgeon were collected in trammel nets and gill nets. Additionally, several hundred sturgeon snagged or angled at the Intake Diversion Dam were inspected to determine if any were pallids. No pallid sturgeon were collected with nets or by anglers. Several hundred shovelnose sturgeon were fin-clipped and released, but only a few were recaptured. Two shovelnose were of record size for Montana, 17 and 18 pounds. Contact: Tom Parks (406-657-6733), Bureau of Reclamation, Billings, MT or Phil Stewart (406-232-4365), Montana Department of Fish, Wildlife and Parks, Miles City, MT.

The Service's **Fish Technology Center** in Bozeman produced an experimental diet for pallid sturgeon fry. The diet was tested this summer on pallids at **Valley City National Fish Hatchery** in North Dakota. Refer to the report on Valley City NFH activities on page 3. Contact: Dave Erdahl (406-587-9265), Fish and Wildlife Service, Bozeman, MT.



Iowa Darter

<u>Activities in North Dakota</u> - **Fish and Wildlife Enhancement** (Enhancement) in Bismarck has produced a 12-inch plastic ruler with information on pallid sturgeon printed on both sides. Rulers will be distributed free of charge to Missouri River anglers in North Dakota and South Dakota next spring. The ruler text informs anglers that pallid sturgeon are endangered and must be released. Also included are general pallid sturgeon identification, handling, and releasing tips. Anglers are requested to inform the Service if a sturgeon longer than 30 inches is caught. The Service hopes the rulers increase the frequency and accuracy of pallid sturgeon catch reports made by anglers. Sample rulers are available upon request. Contact: Selena Werdon (701-250-4414), Fish and Wildlife Service, Bismarck, ND.

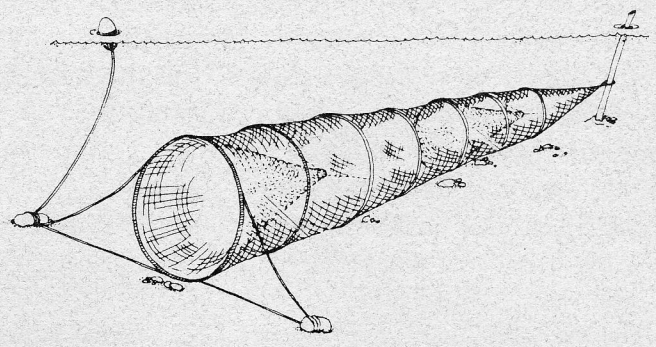
The Service's **Fish and Wildlife Assistance** and **Enhancement** offices in Bismarck are examining seasonal use and spawning habitat of pallid sturgeon on the Yellowstone River in North Dakota. The study, funded by the **North Dakota Department of Transportation** (NDDOT), focuses on a 3-mile stretch of river near the Highway 200 bridge. The bridge will be replaced in the near future and this study will enable the NDDOT to minimize impacts of construction activities on pallid sturgeon and their habitat. Initial sampling took place in July 1992 and future work will occur in October 1992 and May 1993. No pallid sturgeon were collected in July. However, three candidate species (sturgeon chub, sicklefin chub, and paddlefish) were collected. Contact: Steve Krentz (701-250-4419) or Selena Werdon (701-250-4414), Fish and Wildlife Service, Bismarck, ND.

The **North Dakota Game and Fish Department** (Department) has produced a report detailing preliminary pallid sturgeon status work accomplished in North Dakota. Field activities on the Missouri River (netting and habitat data collection) will continue through October. Data are being taken from shovelnose sturgeon including: lengths, weights, sex, food habits, habitat, and age-growth. Between May and July, the Department collected 44 shovelnose sturgeon. Most were collected in off-channel habitats. Main channel habitats provided the second largest number of shovelnose, while relatively few were caught at tributary mouths. Chironomids were the most abundant food item in shovelnose stomachs, followed by fish eggs. Sand, coal, gravel, and vegetation were also found. Contact: Scott Elstad (701-654-7475), North Dakota Game and Fish Department, Riverdale, ND.

Earlier this summer, **Valley City National Fish Hatchery** performed feeding trials with 500 pallid sturgeon fry. The fry were flown in from **Blind Pony State Hatchery** in Missouri. The 30-day trials compared growth and survival of fry fed three different diets. These diets were: Biodiet, BioKiowa, and an experimental diet produced by the Service's **Fish Technology Center** in Bozeman, Montana. Results of the trials indicated that fish fed BioKiowa had the best growth, while the experimental diet had the best survival. The Biodiet fish had high initial mortality, but larger fry fed Biodiet had good survival. Contact: Matt Bernard (701-845-3482), Fish and Wildlife Service, Valley City, ND.

Activities in South Dakota - Personnel from **Fish & Wildlife Assistance** (Bismarck, ND), the **Missouri River Coordinators** (Pierre, SD) office, **South Dakota Game, Fish and Parks**, and **Gavins Point National Fish Hatchery** participated in a joint effort to collect pallid sturgeon from Lake Sharpe, South Dakota during June. This effort was continued in July by Fish and Wildlife Assistance. All pallids collected were transported to Gavins Point National Fish Hatchery to serve as broodstock. Contact: Al Sandvol (701-250-4419), Fish and Wildlife Service, Bismarck, ND or Jim Riis (605-773-5535), South Dakota Game, Fish, and Parks, Pierre, SD.

Gavins Point National Fish Hatchery and **Montana Department of Fish, Wildlife, and Parks** personnel collected 15 shovelnose sturgeon near the mouth of the Powder River in Montana during May 1992. These fish (4 females, 11 males) were transported to the hatchery, injected with LHRH, and spawned by Caesarian section on June 12th. No female shovelnose sturgeon survived longer than one week after spawning; all males survived. Nearly 125,000 eggs were collected during the spawning and approximately 20,000 fry were produced. Shovelnose sturgeon fry (5,000) were fed BioKiowa and Silver Cup Salmon Starter in a feed trial. Fingerlings are now being fed Silver Cup alone, with good conversion and growth. Adult pallid sturgeon held at the hatchery are feeding and gaining weight. One pallid collected near the mouth of the Niobrara has gained 3 pounds. Contact: Herb Bollig (605-665-3352), Fish and Wildlife Service, Yankton, SD.



Fish and Wildlife Enhancement in Pierre, South Dakota has recently completed a report titled "A Study of Pallid Sturgeon and Shovelnose Sturgeon Reproduction". Study results include data on fecundity, egg diameters, gonado-somatic indices, and length at maturity for both species. Enhancement is interested in comparing data on the health and reproductive cycles of shovelnose sturgeon among states. Other agencies collecting shovelnose sturgeon and interested in assisting this effort are invited to contribute their data. Contact: Dick Ruelle (605-224-8693), Fish and Wildlife Service, Pierre, SD.

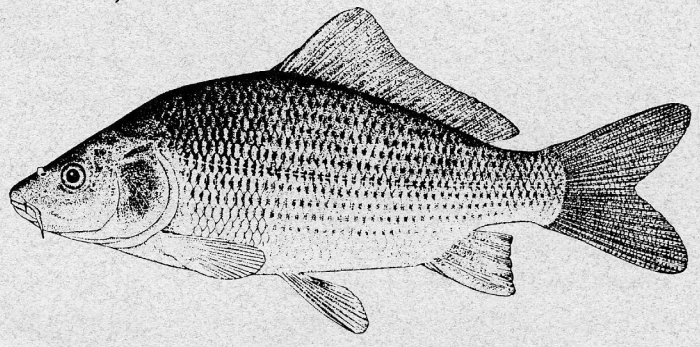
Activities in Missouri - **Missouri Department of Conservation** (MDC) personnel were successful in spawning pallid sturgeon earlier this spring and fry survival has exceeded the expectations of the **Pallid Sturgeon Recovery Team**. The fry were produced to provide future broodstock and to be used in research and public outreach. The Recovery Team determined that genetic analyses of parental stocks and wild populations were necessary before stocking hatchery-reared pallids. Genetic analyses are underway, but preliminary results will not be available until fall. Meanwhile, the MDC has developed a stocking plan for propagated pallids, as requested by the Recovery Team. Two pallid sturgeon stocking alternatives were proposed. Under option 1, fingerlings (10-12 inches total

length) would be stocked at 15-20 locations on the Mississippi River to reduce genetic swamping of resident pallids and to increase survival. Under option 2, half of the pallids would be stocked as in option 1, while the others would be stocked in two MDC-managed reservoirs. Reservoir stocked fingerlings would be easier to monitor and would provide information on growth, survival, and maturation. The Recovery Team wishes to protect the genetic purity of remaining wild pallid sturgeon, while taking advantage of unexpected productivity. Contact: Kim Graham (314-882-9880), Missouri Department of Conservation, Columbia, MO.

Blind Pony State Hatchery is currently holding approximately 20,000 pallid sturgeon fingerlings produced at the hatchery earlier this year. During feed performance trials, one-half of the fish were fed frozen brine shrimp, while the others were fed BioKiowa. Both feeds are relatively expensive and alternative feeds are being evaluated at other hatcheries. The pallids are currently averaging greater than five inches in total length. Contact: Jerry Hamilton (816-335-4531), Missouri Department of Conservation, Sweet Springs, MO.

The Service's **National Fisheries Research Center** in Columbia, Missouri has obtained the results of contaminant analyses of eggs from two pallid sturgeon and a suspected hybrid spawned at **Blind Pony State Hatchery**. The eggs were analyzed for commonly occurring persistent organochlorine and trace metal contaminants. Overall, contaminant levels were very low compared with data from fish collected in 1986 for the National Biomonitoring Program. Selenium levels were slightly elevated, but the sensitivity of different pallid sturgeon life stages to selenium is unknown. Contact: Ted Schwartz (314-875-5399), Fish and Wildlife Service, Columbia, MO.

Activities in Louisiana - The **Louisiana Department of Wildlife and Fisheries** (LDWF) is studying pallid sturgeon distribution and abundance on the Mississippi River. The study is funded by a privately-owned hydropower plant and is focusing on the area around the Old River Control Structure. Built by the U.S. Army Corps of Engineers, the structure regulates water flowing into the Mississippi and Red/Atchafalaya Rivers. A hydropower plant was built near this site in the mid-1980's. Hydropower operations interfere with the passage of water and sediments through the control structure and dredging of accumulated sand is required. Pallid sturgeon have been collected in the area previously and this study is documenting current use. The LDWF began sampling in June using gill nets and hoop nets. No sturgeon were collected during two sampling periods. However, two shovelnose sturgeon were collected downstream of the structure during the second week of August. The study also includes water quality data collection. The Corps and the hydroplant are also assisting by providing flow and river stage data. This data will be correlated with fish collections. Contact: Bobby Reed (318-491-2577), Louisiana Department of Wildlife and Fisheries, Lake Charles, LA.



Common Carp

Contaminants in Pallid Sturgeon

Fish and Wildlife Enhancement in Pierre, South Dakota has obtained preliminary contaminants data from nine pallids incidentally collected in previous years. Contaminant concentrations in Missouri River fish were compared with Mississippi River fish. The Missouri River fish had higher concentrations of PCB's and chlordane. Alpha, beta, and gamma BHC were detected in some Missouri River fish, but not in Mississippi River fish. Concentrations of some contaminants increased with increasing fish

weight and length. Gonad and liver tissues concentrated lipophilic organochlorine compounds. However, impacts of contaminants to the prior health and reproductive capabilities of these fish are unknown.

Pallid Sturgeon Catch Reports in 1992

A total of 21 pallids have been reported captured by fishermen and fishery field crews between April 15 and August 15, 1992. Following is a listing of reported pallid catches from throughout the species' range. These catch records and all pertinent information available on capture location, length, weight, gear, etc., are recorded in the Service's Pallid Sturgeon Catch Record Database maintained in Bismarck, North Dakota.

A pallid captured February 10, 1990, in the Fort Peck tailrace and radio/sonic tagged, was recaptured on July 12th. The fish was caught and released by an angler fishing the Missouri River near Culbertson, Montana. It had shed the external transmitter and appeared healthy.

A 26.5 pound pallid was captured on the Missouri River in South Dakota above the Running Water boat ramp (RM 841) on May 19th. The fish was captured in a gill net by University of South Dakota personnel. This fish was transported to Gavins Point National Fish Hatchery for future captive propagation activities.

One pallid sturgeon was caught in June by an angler at the Intake Diversion on the Yellowstone River, Montana. It weighed approximately 35 pounds and was tagged by MTDFWP and released.

A pallid was reported captured by an angler fishing the Missouri River near the mouth of the Niobrara River in Nebraska.

Three pallid sturgeon were collected in gill nets fished on Lake Sharpe, South Dakota from June 16-20. Two were collected near DeGrey, while the other was collected near Fort George. These fish weighed 15.75, 21.5, and 24.5 pounds. Five additional pallids were collected in July on Lake Sharpe. All were transported to Gavins Point National Fish Hatchery, where three of the fish died between 3-5 days later. The fish were in poor condition with relative weights (W_r) of 61-65. They appeared stressed and inactive upon arrival at the hatchery and were treated with salt and terramycin. The cause of death is still under investigation.

The MTDFWP has caught nine pallid sturgeon on the Wild and Scenic Missouri River above Fort Peck Reservoir this summer. Seven of these fish were new captures, while two were recaptures. One of the recaptures was tagged in 1990 and the other in 1991. Six of the pallids were caught on long lines baited with flathead chubs (Platygobio gracilis). The other three were caught in trammel nets. One pallid weighed only 17.5 pounds, the smallest pallid sturgeon recorded in Montana.

> Extinction is only the most extreme manifestation of the loss of biodiversity - for every species that vanishes countless populations and unique gene pools are also extinguished.
>
> (author unknown)

Pallid Sturgeon Recovery Plan Progress

The Draft Pallid Sturgeon Recovery Plan has been printed. The Fish and Wildlife Service is awaiting official notification in the Federal Register that the Plan is available for review and comment before copies are mailed out to affected State and Federal government agencies, non-government organizations, private industry, and individuals. The comment period for the draft Plan will be 60 days. Contact: Mark Dryer, Recovery Team Leader, 701-250-4491.

Energizing Pallid Sturgeon Recovery

The Mid-Continent Area Power Pool (MAPP) is an organization of electrical power producers in the Northern Great Plains. A MAPP Environmental Subcommittee meeting was held in Billings, Montana during July. Mark Dryer, the Pallid Sturgeon Recovery Team Leader, presented information on pallid sturgeon recovery needs. Power producers were reminded to screen water intakes, minimize impingement of larval fish, and to minimize impacts of dredging around intakes. Industry participation in pallid sturgeon recovery through industry-sponsored research and information/education projects was encouraged. MAPP members are taking a pro-active approach toward pallid sturgeon recovery.

Pallid Sturgeon Stocking

The Service's Fisheries and Federal Aid Division has drafted plans for pallid sturgeon stocking and for the disposition of surplus artificially propagated endangered fish. Fish stocking and surplus fish disposal are controversial issues in recovery programs. The "Pallid Sturgeon Stocking Plan" followed the draft Federal "Guidelines for Preparation of a Stocking Plan for Threatened and Endangered Fishes". Disposition of surplus hatchery produced fish will follow the "Guidelines for Use of Fishes in Field Research" developed by the American Society of Ichthyologists and Herpetologists, the American Fisheries Society, and the American Institute of Fisheries Research Biologists.

Information/Education and Research Opportunities

Some of the 20,000 pallid sturgeon fingerlings currently held at Blind Pony State Hatchery in Missouri are available to universities and research stations. Recovery-related research needs from lab studies include: temperature and velocity trials, dissolved oxygen tolerances, bioassays, behavioral studies, and juvenile growth feed trials, among others. Fish will also be available for public displays at aquarium facilities sufficiently equipped to hold pallid sturgeon where they can be displayed for promotion of sturgeon conservation and recovery. Those interested in obtaining pallids should contact: Mark Dryer, Recovery Team Leader, 701-250-4491.

Relative Weights of ND/MT Pallids

By: Steve Krentz

Relative weight is an indicator of the overall condition of a fish. To determine relative weights of pallid sturgeon, a regression equation was calculated (Figure 1). Fork length and weight data from 33 pallids collected from North Dakota and Montana since 1988 were used to calculate the equation. Relative weights ranged from 76 to 147. In comparison, pallids collected in 1992 (n = 8) from Lake Sharpe, South Dakota had relative weights of 56-80. These relative weights indicate that the pallids from the upper reaches of the Missouri River appear to be in better flesh condition than the reservoir pallids. Further analysis will be required as more data are collected.

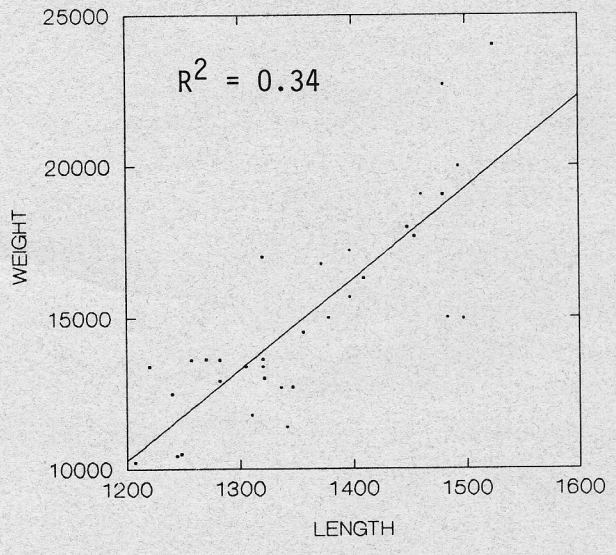


Figure 1. Regression analysis of pallid sturgeon (n = 33) from North Dakota and Montana [log10 Ws = -4.0607 + 2.6272 log10 (fork length)].

Share what you are doing for sturgeon conservation on the Missouri and Mississippi Rivers with other sturgeon researchers. Submissions of sturgeon articles and associated materials are welcome. Please send a hardcopy and/or disk copy (WP 5.1) to Mark Dryer at the U.S. Fish and Wildlife Service, 1500 Capitol Ave., Bismarck, ND 58501 (701-250-4491).

Sturgeon - Paddlefish Session

The American Fisheries Society is holding its annual national meeting in Rapid City, South Dakota during September. Of special interest is the technical session - The Prehistoric Survivors: Paddlefish and Sturgeon Management and Culture. This session is taking place Wednesday, September 16, from 8:30 a.m. to 4:10 p.m.

Recycled paper

Pallid Sturgeon Recovery Team Members

Mark Dryer *(Leader), USFWS, Fish and Wildlife Enhancement, Bismarck, ND*

Al Sandvol, *USFWS, Fish and Wildlife Assistance Office, Bismarck, ND*

Mark Harberg, *U.S. Army Corps of Engineers, Omaha, NE*

Pat Clancey, *Montana Department of Fish, Wildlife and Parks, Ft. Peck, MT*

James Riis, *South Dakota Game, Fish and Parks Department, Pierre, SD*

Kim Graham, *Missouri Department of Conservation Columbia, MO*

Bobby Reed, *Louisiana Department of Wildlife and Fisheries, Lake Charles, LA*

Dr. Frank Chapman, *University of Florida, Gainesville, FL*

Dr. Kent Keenlyne *(Consultant), USFWS, Fish and Wildlife Assistance Office, Pierre, SD*

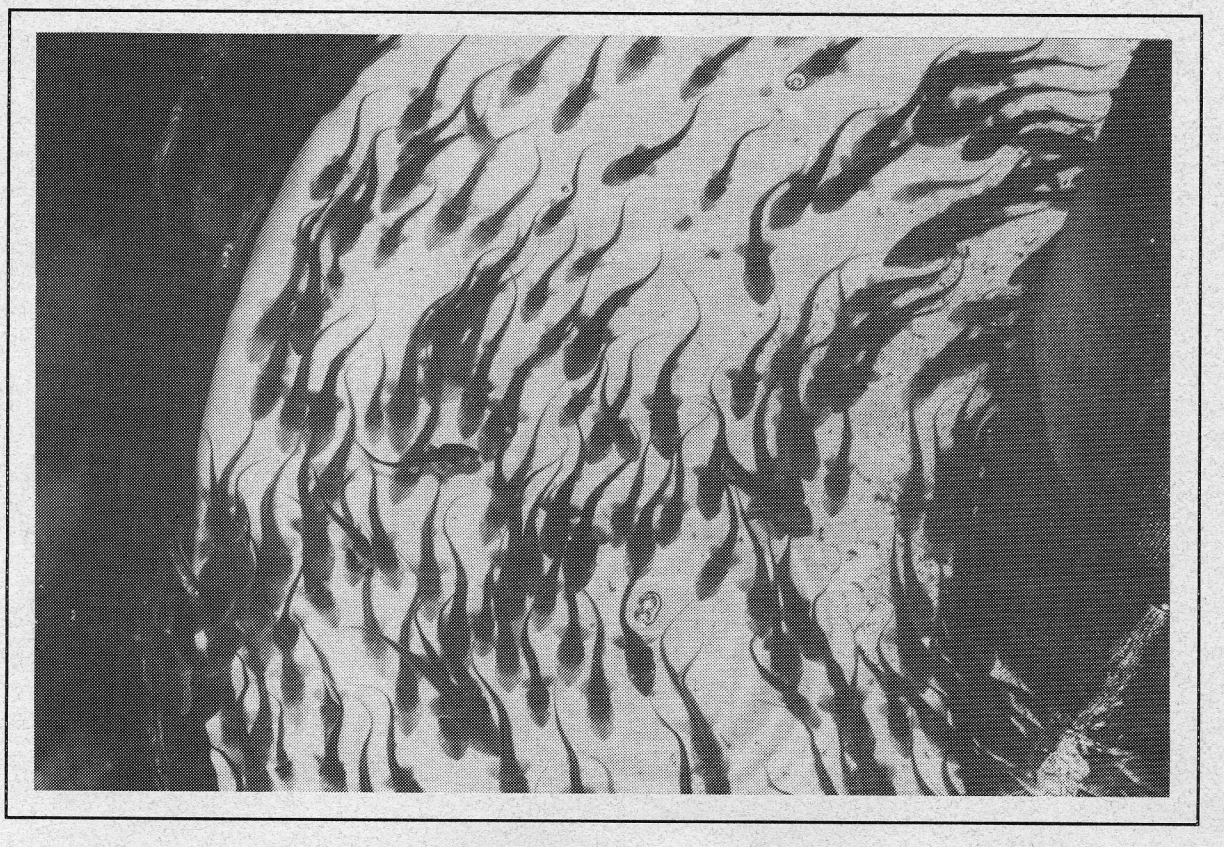


PHOTO: Pallid sturgeon fingerlings at Valley City National Fish Hatchery, North Dakota.